

## New Appendix D to SRP Chapter 19

### USE OF RISK INFORMATION IN REVIEW OF NON-RISK-INFORMED LICENSE AMENDMENT REQUESTS

#### Areas of Review

When a license amendment request complies with the regulations and other license requirements, there is a presumption by the Commission of adequate protection of public health and safety (Maine Yankee, ALAB-161, 6 AEC 1003 (1973)). However, circumstances may arise in which new information reveals an unforeseen hazard or a substantially greater potential for a known hazard to occur, such as identification of an issue that substantially increases risk. In such situations, the NRC has the statutory authority to require licensee action above and beyond existing regulations to maintain the level of protection necessary to avoid undue risk to public health and safety. Section 182.a of the Atomic Energy Act of 1954, as amended, and as implemented by 10 CFR 2.102, gives the NRC the authority to require the submittal of information in connection with a license amendment request if NRC has reason to question adequate protection of public health and safety. The licensee may decline to submit such information, but it would risk having the amendment request denied if NRC cannot find that the requested amendment provides adequate protection of public health and safety.

Under unusual circumstances which could introduce significant and unanticipated risks, the NRC staff reviewers would assume the burden of demonstrating that the presumption of adequate protection is not supported by the bases for the existing staff positions despite the fact that currently specified regulatory requirements are met. Instances in which the reviewers would question licensees regarding risk are expected to be rare. The process used for identifying those situations in which risk implications are appropriate to consider and for deciding if undue risk exists is depicted in Figure 1. This process can be used in the review of both licensee-initiated risk-informed license amendment requests, as well as license amendment requests in which the licensee chooses to not submit risk information (i.e., non-risk informed requests.)

License amendment requests will be screened for potential risk implications as part of the license amendment review process. Office-level license

amendment review procedures provide guidance on which license amendment requests should be examined at the level of the integrated risk model due to the potential for significant impacts on plant risk<sup>1</sup>. In accordance with the guidance, the risk implications of a non-risk-informed submittal would be discussed with a risk analyst if the submittal:

- ! significantly changes the allowed outage time (e.g., outside the range previously approved at similar plants), probability of initiating event, probability of successful mitigative action, functional recovery time, or operator action requirement;
- ! significantly changes functional requirements or redundancy;
- ! significantly changes operations that affect the likelihood of undiscovered failures;
- ! significantly affects the basis for successful safety function; or
- ! could create "special circumstances" under which compliance with existing regulations may not produce the intended or expected level of safety, and plant operation may pose an undue risk to public health and safety.

Non-risk-informed license amendment requests judged to have the potential to significantly impact risk would be referred for a more detailed risk evaluation as part of the license amendment review.

#### Review Guidance and Procedures

For license amendment requests referred for a risk review, the reviewers should assess the requested changes, and the need for and effectiveness of any compensatory measures that might be warranted because of risk considerations, by evaluating the changes relative to the safety principles and integrated decisionmaking process defined in Regulatory Guide (RG) 1.174. The risk acceptance guidelines (Sections

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<sup>1</sup> Following approval of the subject SRP changes, the staff will update the license amendment review procedures to include supplemental information on "special circumstances" and other conforming changes.

2.2.4 and 2.2.5 of RG 1.174) describe acceptable levels of risk increase as a function of total core damage frequency (CDF) and large early release frequency (LERF) and the manner in which the acceptance guidelines should be applied in the review and decisionmaking process. Reviewers should note that the guidelines serve as a point of reference for gauging risk impact but are not legally binding requirements.

For non-risk informed license amendment requests, the preliminary assessment would be qualitative with a decision based on engineering judgment since quantitative risk information would not generally be presented in submittals that are not risk informed. If "special circumstances" are believed to exist, the reviewers will explore in more detail the underlying engineering issues contributing to the risk concern, and the potential risk significance of the license amendment request.

"Special circumstances" represent conditions or situations that would raise questions about whether there is adequate protection, and that could rebut the normal presumption of adequate protection from compliance with existing requirements. In such situations, undue risk may exist even when all regulatory requirements are satisfied. In general, these situations would not have been identified or specifically addressed in the development of the current set of regulations, and would be important enough to warrant the promulgation of a new regulation (e.g., a risk-informed regulation) if such situations were encountered on a widespread basis. "Special circumstances" may include but not be limited to license amendment requests which, if approved, could:

- ! substantially increase the likelihood or consequences of accidents that are risk-significant but beyond the design and licensing basis of the plant, for example:
  - proposed changes to steam generator (SG) allowable leak rates that meet Part 100 limits based on the design basis source term, but result in a large early release given a severe accident source term; or use of new materials for SG repairs that provide acceptable performance under normal and design basis accident conditions, but a reduced capability to maintain SG tube integrity in high temperature severe accident scenarios.
- ! degrade multiple levels of defense, or cornerstones in the reactor oversight process,

through plant operations or situations not explicitly considered in the development of the regulations, e.g., advanced applications of digital instrumentation and controls without due consideration of defense-in-depth.

- ! significantly reduce the availability/reliability of SSCs that are risk-significant but not required by regulations, e.g., turbine driven AFW pumps provided in response to NUREG-0737, II.E.1.1, or hardened vents in Mark I containments that protect against containment over-pressure failures in accidents beyond the design basis.
- ! involve changes for which the synergistic or cumulative effects could significantly impact risk, e.g., large power uprate requests.

If upon further consideration it is believed that approval of the request would compromise the safety principles described in RG 1.174 and substantially increase risk relative to the risk acceptance guidelines contained in the RG, the reviewers should inform NRC management of the risk concerns, and the need to further evaluate the risk associated with the request. The general criteria that should be met are that: (1) the reviewer has knowledge that indicates that the risk impact associated with the requested change is not reflected by the licensing basis analysis, and (2) the reviewer has reason to believe that the magnitude of the risk increase may be sufficient to warrant denial of the request or to warrant attaching conditions to its approval of the request, if the request were evaluated in the context of the existing guidance for approval of risk-informed applications.

In such instances, the reviewers with management concurrence should ask the licensee to address the safety principles and the numerical guidelines for acceptable risk increases contained in RG 1.174 in their submittal. The reviewers may alternatively ask the licensee to submit the information needed for the NRC staff to make an independent risk assessment. If a licensee does not choose to address risk, the reviewers should not issue the requested amendment until they have assessed the risk implications sufficiently to determine that there is reasonable assurance that the public health and safety will be adequately protected if the amendment request is approved. A licensee's decision not to submit requested information could impede the staff's review and could also prevent the reviewers from reaching a finding that there is reasonable assurance of adequate protection. A

licensee's failure to submit requested information could also be a basis for rejection pursuant to 10 CFR 2.108.

### **Evaluation Findings**

The numerical guidance for CDF and LERF provided in RG 1.174 is intended to provide a basis for finding that there is reasonable assurance of adequate protection. Therefore, situations that exceed these values or violate the other principles would constitute a trigger point at which questions are raised as to whether the proposed change provides reasonable assurance of adequate protection. A more in-depth assessment of the special circumstances, the safety principles, and the issues identified for management attention in Section 2.2.6 of RG 1.174 should then be made in order to reach a conclusion regarding the level of safety associated with the requested change.

In making this assessment, the reviewers should be mindful to clearly differentiate the concept of adequate protection from the numerical risk acceptance guidelines. The guidelines in themselves do not constitute a definition of adequate protection, but provide an appropriate set of criteria to be used in the process for evaluating adequate protection. It is not the NRC's policy or within the NRC's technical capabilities to allow risk to increase to a point where protection is almost, but not quite, inadequate. As discussed in RG 1.174, the uncertainty in the analyses must be considered in any finding that adequate protection is achieved. The final acceptability of the proposed change should be based on a consideration of current regulatory requirements, as well as on adherence to the safety principles, and not solely on the basis of a comparison of quantitative PRA results with numerical acceptance guidelines. The authority provided by the Atomic Energy Act and current regulations requires rejection of a license amendment request if the NRC is unable to find that adequate protection is provided.

**Figure 1 - Process and Logic for Considering Risk in License Amendment Reviews**

